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10/775,864	02/10/2004	Robert L. Ponziani	13-DV-132639B	1499

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General Electric Co.
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EXAMINER	
HE, AMY	

ART UNIT	PAPER NUMBER
2858	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/775,864	PONZIANI ET AL.	
	Examiner	Art Unit	
	Amy He	2858	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 January 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) *14-18* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-13,19 and 20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *10 February 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *02/10/2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities:

In the specification, page 1 [0001], the corresponding application serial numbers or patent numbers referred to in the specification need to be provided. For example, on page 1, [0001], line 5, replace "SN__/ __, __ ;" with --U. S. Patent No. 7, 015, 698--.

Appropriate correction is required.

Election/Restrictions

2. Applicant's election with traverse of claims 1-13 in the reply filed on January 22, 2007 is acknowledged.

3. In response to applicant's response filed on January 22, 2007, the restriction of claims 19-20 is withdrawn.

4. Claims 14-18 are withdrawn from consideration as being directed to a non-elected invention.

Claims 14-18 are drawn to a method for starting a gas turbine engine, classified in class 313, and subclass 141. The restriction for examination purposes as indicated in the prior office action is proper because there would be a serious search and examination burden if restriction were not required because the following reasons apply:

(a) the inventions have acquired a separate status in the art in view of their different classification (e.g., class 313);

(b) the inventions require a different field of search (for example, employing different search queries);

(c) the prior art applicable to one invention would not likely be applicable to another invention(e.g. the prior art applicable to claims 1-13 and 19-20 is not applicable to claims 14-18);

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

5. Claims 1 and 19 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 7-8 of U.S. Patent No. 7,093,422. Although the conflicting claims are not identical, they are not patentably distinct from each other.

As for claim 1, Patent 7,093,422 discloses (in claims 7 and 8) the same subject matter of, in an aircraft powered by a gas turbine engine (see claims 7 and 8) containing an igniter which is fed by a power cable which is surrounded by a conductive shield connected to a system ground(see claim 7, a, ii), a method comprising:

detecting current pulses in the shield (see claim 7, b, i); and

in response to detected current pulses, issuing to a pilot station in the aircraft a signal indicating presence of spark in the igniter(see claim 7, b, ii; and claim 8).

As for claim 19, Patent 7,093,422 discloses (in claims 7 and 8) the same subject matter of operating a gas turbine engine which powers an aircraft (see claim 8), comprising:

maintaining an igniter which is surrounded by a housing(see claim 7, a, part i), and fed by a power cable which is surrounded by a conductive shield which is connected to the housing(see claim 7, a, part ii); and

detecting current in the shield, housing, power cable, or a combination thereof, but without electrically contacting the power cable (claim 7, b, part i); and

in response to detected current, actuating an annunciator(means for issuing the signal indicating spark), informing the pilot of the detected spark(claim 7, b, part ii; and claim 8);

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1-3, 7-10 and 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over McQueeney et al. (U. S. Patent No. 6, 850,070) in view of Frus (U. S. Patent No. 5, 523,691).

As for claims 1, 2, 7 and 8, McQueeney et al. discloses an apparatus/method for testing a shielded igniter (see col. 6, lines 59-67; Figure 4a), comprising:

a detector (inductive sensor 400) for detecting current pulses in a shield (412);

an annunciator (means/device for displaying or indicating output signals from the inductive sensor to an operator, col. 5, lines 48-53; claim 18), in response to detected current pulse, for issuing a signal (e.g., burn time, claim 18; col. 4, lines 62-63) indicating presence of spark in the igniter;

maintaining a coil (coil of the sensor 400) outside the shielding (412); and

detecting current pulses includes detecting induced current in the coil(by using the inductive sensor 400 for detecting induced current).

Still referring to claims 1, 2, 7 and 8, McQueeney et al. does not specifically disclose that the apparatus/method is used in an aircraft powered by a gas turbine engine containing an igniter which is fed by a power cable, and the igniter and the power cable being surrounded by a conductive shield connected to a system ground; and that the signal indicating the presence of spark in the igniter is issued to a pilot station in the aircraft.

Frus discloses (in Figure 1) an apparatus/method using a coil for testing an igniter in an aircraft powered by a gas turbine engine (23) containing an igniter (igniters 1, 2) which is fed by a power cable; and an annunciator (display 51) for issuing a signal indicating presence of spark in the igniter to a user/pilot (Frus, col. 1, lines 19-26; col. 4, lines 5-7; Figure 1).

A person of ordinary skill in the art would find it obvious at the time the invention was made to modify McQueeney et al., to incorporate the inductive sensor 400 in an aircraft powered by a gas turbine engine containing an igniter which is fed by a power cable; and issues the signal indicating presence of spark in the igniter to a user/pilot in a pilot station in the aircraft, as taught by Frus, for the purpose of adapting the inductive sensor to other desired ignition system or engines, for extending the detection capabilities into low coil fields (see McQueeney reference, col. 12, lines 31-37; col. 12, lines 65-67; col. 13, lines 1-5).

Moreover, the person of ordinary skill in the art would also find it obvious to further modify McQueeney et al. in view of Frus, to disclose that the igniter and the power cable feeding the igniter are both surrounded by a conductive shield connected to a system ground, to allow detection of the current pulses in the shield, for the purpose of reducing interferences and attenuating electric and magnetic fields emanating from the ignition system (McQueeney reference, col. 3, lines 1-8).

As for claim 9, McQueeney et al. discloses an apparatus for testing a shielded igniter (see col. 6, lines 59-67; Figure 4a), comprising:

a coil (coil of the sensor 400) outside a shielding (412);

a detector (inductive sensor 400) for detecting current pulses in the coil; and

an annunciator (means/device for displaying or indicating output signals from the inductive sensor to an operator, col. 5, lines 48-53; claim 18), for issuing a signal (e.g., burn time, claim 18; col. 4, lines 62-63) indicating presence of spark in the igniter, in response to detected current pulses.

Still referring to claim 9, McQueeney et al. does not specifically disclose that the apparatus is used in an aircraft powered by a gas turbine engine containing an igniter which is fed by a power cable, and the igniter and the power cable being surrounded by a conductive shielding; and that the signal indicating presence of spark in the igniter is issued to a pilot station in the aircraft.

Frus discloses (in Figure 1) an apparatus/method using a coil for testing an igniter in an aircraft powered by a gas turbine engine (23) containing an igniter (igniters

1, 2) which is fed by a power cable; and an annunciator (display 51) for issuing a signal indicating presence of spark in the igniter to a user/pilot (Frus, col. 1, lines 19-26; col. 4, lines 5-7; Figure 1).

A person of ordinary skill in the art would find it obvious at the time the invention was made to modify McQueeney et al., to incorporate the inductive sensor 400 in an aircraft powered by a gas turbine engine containing an igniter which is fed by a power cable; and issues a signal indicating presence of spark in the igniter to a user/pilot in a pilot station in the aircraft, as taught by Frus, for the purpose of adapting the inductive sensor to other desired ignition system or engines, for extending the detection capabilities into low coil fields (see McQueeney reference, col. 12, lines 31-37; col. 12, lines 65-67; col. 13, lines 1-5).

Moreover, the person of ordinary skill in the art would also find it obvious to further modify McQueeney et al. in view of Frus, to disclose that the igniter and the power cable feeding the igniter are both surrounded by a conductive shielding, for the purpose of reducing interferences and attenuating electric and magnetic fields emanating from the ignition system (McQueeney reference, col. 3, lines 1-8).

As for claims 3 and 10, McQueeney et al. discloses that no components involved in detecting the current pulses penetrate the conductive shielding (i.e. the sensor 400 is an inductive sensor for sensing the current induced; Figure 4a).

As for claims 19 and 20, McQueeney et al. discloses (in Figures 1C and 4A) a method comprising:

maintaining an igniter (igniter of the coil on plug COP) which is surrounded by a housing(housing of the COP), and fed by a power cable (152 in Figure 1C); and

detecting current in a shield, housing, power cable, or a combination thereof, but without electrically contacting the power cable(i.e. by using the non-contact type inductive sensor 400), and, in response to detected current, actuating an annunciator (means/device for displaying or indicating output signals from the inductive sensor to an operator, col. 5, lines 48-53; claim 18) informing the user of the detected spark (e.g., burn time, claim 18; col. 4, lines 62-63);

wherein the process of detecting current comprises:

maintaining a coil (coil 430 in the inductive sensor 400) adjacent a shield(412)(see Figure 4A);

inducing currents in the coil (430) by currents in the shield;

detecting induced currents in the coil (by using the inductive sensor 400 in Figure 4A and the RLC circuit of Figure 4B); and

issuing the signal in response to detection of the induced current (col. 4, lines 62-63; col. 5, lines 48-53; claim 18).

Still referring to claims 19 and 20, McQueeney et al. does not specifically disclose that the method is used in a gas turbine engine which powers an aircraft; and the power cable is surrounded by a conductive shield which is connected to the housing;

and that the annunciator is at a pilot station in the aircraft, for informing the pilot of the detected spark.

Frus discloses (in Figure 1) a method for testing an igniter in an aircraft powered by a gas turbine engine (23); and an annunciator (display 51) for issuing a signal indicating presence of spark in the igniter to a user/pilot (Frus, col. 1, lines 19-26; col. 4, lines 5-7; Figure 1).

A person of ordinary skill in the art would find it obvious at the time the invention was made to modify McQueeney et al., to disclose that the method of inductively sensing the spark is used in an aircraft powered by a gas turbine engine; and that the annunciator is at a pilot station in the aircraft, for informing the pilot of the detected spark, as taught by Frus, for the purpose of adapting the inductive sensor to other desired ignition system or engines, for extending the detection capabilities into low coil fields (see McQueeney reference, col. 12, lines 31-37; col. 12, lines 65-67; col. 13, lines 1-5).

Moreover, the person of ordinary skill in the art would also find it obvious to further modify McQueeney et al. in view of Frus, to disclose that the igniter and the power cable feeding the igniter are surrounded by a conductive shield connected to the housing, for the purpose of reducing interferences and attenuating electric and magnetic fields emanating from the ignition system (McQueeney reference, col. 3, lines 1-8).

7. Claims 4-6 and 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over McQueeney et al. (U. S. Patent No. 6, 850,070) in view of Frus (U. S. Patent No. 5, 523,691), and further in view of Applicant's admitted prior art, or William Hayt and Jack

Kemmerly, "Engineering Circuit Analysis" (thereafter referred to as Hayt et al.)(see instant specification pages 20-21, [0106] --[0109]).

As for claim 4, McQueeney et al. in view of Frus discloses the method as in claim 2, wherein the current pulses have a duration D and a frequency f (i.e., the duration and frequency of the current induced on sensor 400), and wherein detecting the current pulses comprises:

maintaining a series RLC circuit (see the RLC circuit as shown in Figure 4B), comprising inductor L, resistor R, and capacitor C,

wherein the inductor L (430) comprises the coil.

Still referring to claim 4, McQueeney et al. in view of Frus does not specifically disclose that the RLC circuit amplifies signals induced by the pulses.

Hayt et al. discloses that " a series RLC circuit can be designed to produce an amplified voltage across the capacitor under certain conditions, such as resonant at a sinusoidal steady-state (see instant specification pages 20-21, [0106] --[0109]).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to further modify McQueeney et al. in view of Frus, to design the RLC circuit so that it amplifies an voltage across the capacitor of the RLC circuit, as taught by Hayt et al., for the purpose of providing an amplified output to compensate for diminished available flux due to the use of additional shielding around the power cable and the igniter (McQueeney reference, col. 8, lines 45-50).

As for claim 11, McQueeney et al. in view of Frus discloses the apparatus as in claim 9, wherein the current pulses have a duration D and a frequency f (i.e., the duration and frequency of the current induced on sensor 400), and further comprises:

a series RLC circuit (see the RLC circuit as shown in Figure 4B), comprising inductor L, resistor R, and capacitor C,

wherein the inductor L (430) comprises the coil.

Still referring to claim 11, McQueeney et al. in view of Frus does not specifically disclose that the RLC circuit is resonant at a steady-state sinusoidal frequency F, wherein F lies within the range of (0.8)(1/D) to (1.2)(1/D).

Hayt et al. discloses that "a series RLC circuit can be designed to produce an amplified voltage across the capacitor under certain conditions, such as resonant at a sinusoidal steady-state frequency by choosing the values for the RLC circuit (see instant specification pages 20-21, [0106] --[0109]).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to further modify McQueeney et al. in view of Frus, to design the RLC circuit, i.e., by choosing the values of L and C for the RLC circuit, so that the RLC circuit resonant at a steady-state sinusoidal frequency, as taught by Hayt et al., for the purpose of providing an amplified output to compensate for diminished available flux due to the use of additional shielding around the power cable and the igniter (McQueeney reference, col. 8, lines 45-50).

Moreover, the person of ordinary skill in the art would find it obvious to further modify McQueeney et al. in view of Frus, to design the RLC circuit, or choose the L and

C values so that the frequency F lies within the range of (0.8)(1/D) to (1.2)(1/D) as claimed, or any other workable ranges of frequency, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 220 F. 2d 454, 456, 105 USPQ 233, 235 (CCPA 1955), for the purpose of providing an amplified output to compensate for diminished available flux due to the use of additional shielding around the power cable and the igniter (McQueeney reference, col. 8, lines 45-50),

As for claims 5 and 12, McQueeney et al. in view of Frus discloses the method/apparatus of claims 2 and 9 as discussed above, wherein the current pulses generate voltage pulses (col. 8, lines 19-20) in the coil (430), the coil has an inductance L (col. 7, lines 43-44), and detecting the current pulses comprises:

connecting the coil (430) to a circuit containing a resistance R (col. 7, lines 61-67) and a capacitance C(col. 7, lines 53-60).

still referring to claims 5 and 12, McQueeney et al. in view of Frus does not specifically disclose using a value of capacitance C which causes amplification of the voltage pulses.

Hayt et al. discloses that " a series RLC circuit can be designed by choosing the values of the capacitor C and inductor L, to produce an amplified voltage across the capacitor under certain conditions, such as resonant at a sinusoidal steady-state (see instant specification, section [0111]--[0114]).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to further modify McQueeney et al. in view of Frus, to design the RLC circuit, to have a value of capacitance C and inductance L, to amplify an voltage across the capacitor of the RLC circuit, as taught by Hayt et al., for the purpose of providing an amplified output to compensate for diminished available flux due to the use of additional shielding around the power cable and the igniter (McQueeney reference, col. 8, lines 45-50).

As for claims 6 and 13, McQueeney et al. in view of Frus and further in view of Hayt et al. discloses the method of claim 5 as discussed above, wherein the amplification of the voltage pulses causes a voltage signal to appear across the capacitance C which is greater than voltage appearing across the coil in the absence of the circuit (i.e., the voltage across the capacitance in the RLC circuit of Figure 4B is amplified, thus it is greater than the voltage appearing across the coil in the absence of the circuit).

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Amy He whose telephone number is (571) 272-2230. The examiner can normally be reached on 8:30am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew Hirshfeld can be reached on 571-272-2168. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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